



# Effects of Microwave Pulses on Electronics

MURI

University of Maryland

Started **1 May 01**

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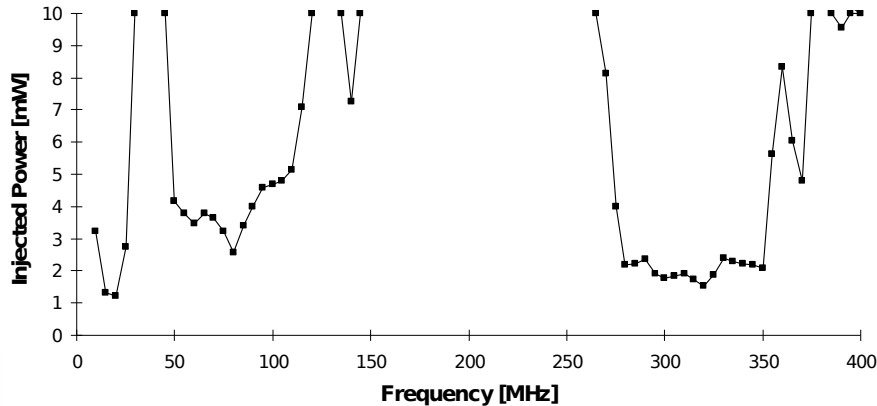
(Subcontract to Boise State University)



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Example of frequency dependent upset:

Power level which can corrupt data stored in a computer's synchronous dynamic random access memory (SDRAM)



## MURI Objectives

- Basic study of physical mechanisms whereby HPM pulses upset or damage modern integrated circuits
- Develop models and methodology enabling HPM resistant component, circuit and system design

## Scientific/technical approaches

- Fabricate ICs with built-in diagnostics
- Develop on-chip sense & protect circuit
- Study potential of chaotic EM waves to produce upset at relatively low power

## Accomplishments

- **Successful preliminary attempt to fabricate on-chip Schottky diode**
- **On-chip sense and protect circuit designed and is being fabricated**
- **Corruption of computer SDRAM found to have complex dependence on RF frequency**
- **Initiated study of EM delay times for complex enclosures using random matrix theory**